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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KITOV, ZEEV

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/747,345

Applicant(s)

UDREN, ERIC A.

Examiner

Zeev Kitov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on July 26, 2004. Claims 6 and 7 are amended. Amendment overcomes the rejection under USC 112, 2nd paragraph.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 3, 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Elmore (US 4,538,195). Regarding Claim 1, Elmore discloses following elements of the claim: a distributed bus differential relay system for an electric power distribution system having a bus (element 12 in Fig. 1), a plurality of feeder lines including at least one feeder line (leftmost elements A, B, C in Fig. 1) supplying power to the bus and the remaining feeder lines connected to draw power from the bus, and a plurality of circuit breakers (elements 28, 32 and 18 in Fig. 1), each connecting an associated one of the feeder lines to the bus, the relay system includes: a plurality of current transformers (elements 22, 24, 26, 36, 38, 40, 48, 50 and 52 in Fig. 1) each measuring current in an associated feeder line and a plurality of differential relay elements (elements 20, 34 and 46 in Fig. 1), each associated with one of the circuit breakers for tripping the associated

circuit breaker in response to predetermined voltage conditions in the inputs of its evaluation circuit (elements 58, 68 and 76 in Fig. 1). As to a set of leads connecting the plurality of current transformers in parallel, they are inherent in the Elmore structure, since it discloses the plurality of the parallel-connected current transformers (elements 22 and 48, 24 and 50, 26 and 52 in Fig. 1 accordingly).

Regarding Claim 2, Elmore discloses the differential relay elements (elements 20, 34 and 46 in Fig. 1) including voltage responsive devices (elements 58, 68 and 76 difference in the inputs of the voltage responsive devices. In the Elmore system, the tripping will be performed in response to a persistent voltage across the leads above a predetermined value.

Regarding Claim 3, Elmore discloses the bus and feeder lines, which are multi-phase, the current transformers (elements 22, 24, 26, 36, 38, 40, 48, 50 and 52 in Fig. 1) are associated with each phase of each feeder line, and the differential relay elements are multi-phase differential relay elements (elements 58, 68 and 76 in Fig. 1) associated with each circuit breaker and responsive to predetermined voltage conditions across any of the phase leads to trip the associated circuit breaker.

Regarding Claim 8, Elmore discloses the system, wherein each circuit breaker has an overcurrent relay (elements 58, 68 and 76 in Fig. 1), which actuates the low energy trip device in response to certain conditions of measured current and the current transformers associated with each feeder line provide measured current to the overcurrent relay of the associated circuit breaker.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore in view of Gonzalez et al. (US 5,670,923) and Wolfe (US 4,876,625). As was stated above, Elmore discloses all the elements of Claim 1. However, regarding Claim 4, it does not disclose the low energy trip device and the differential relays being powdered by differential transformers. Wolfe discloses the relays (elements 19₁ – 19_N in Fig. 2) powdered by differential transformers (elements 31₁ – 31_N in Fig. 2). Both references have the same problem solving area, namely protecting the power distribution systems. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Elmore solution by adding the current transformer feeding according to Wolfe, because it would provide substantial saving of the equipment.

As to low energy trip devices, Gonzalez et al. disclose such low energy tripping device (shown in Fig. 1) based on flux shifting principle and consuming smaller amount of energy for operation. Both references have the same problem solving area, namely providing power system protection equipment. Therefore, it would have been obvious to

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one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the flux shifting tripping device of Gonzalez et al., because as Gonzalez et al. state (col. 1, lines 21 – 30), such trip devices are necessary for adaptation of the digital control systems in the circuit breaker environment.

Regarding Claims 5 and 6 Elmore discloses the system, wherein each circuit breaker has an overcurrent relay (elements 58, 68 and 76 in Fig. 1), which actuates the low energy trip device in response to certain conditions of measured current and the current transformers associated with each feeder line provide measured current to the overcurrent relay of the associated circuit breaker.

Regarding Claims 7, Elmore discloses the system, which performs complex communication and data processing functions. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the microprocessor, since such method of providing communication and data processing functions is widely used in the art and becomes a common knowledge.

Claims 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore in view of Scott (US 4,788,620). Claims 9 and 13 differ from Claim 1 by the limitation of a voltage-limiting device, i.e. varistor. Scott discloses the voltage-limiting device (elements 20 - 22 in Fig. 1) connected across the outputs of the current transformers (elements 14 – 16 in Fig. 1) for limiting the voltage. Both references have

the same problem solving area, namely providing monitoring the power transmission lines. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the voltage limiting element across the outputs of the current transformer according to Granville, because as Scott states (col. 2, lines 20 – 23), it is necessary to protect the the current transformers against excess voltage surges.

As per Claim 11, requiring the voltage limiting device in each differential relay, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by placing the voltage limiting device across the outputs of each current transformer, because otherwise, the differential relays equipment will not be fully protected.

Claims 10, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore in view of Granville and Webb (US 5,982,597). Claim 12 differs from Claim 11 by its limitation of a shorting device. Webb discloses the voltage-limiting device (varistor) having additional thermal protection by shorting when the device is overheated (See Abstract). Both references have the same problem solving area, namely protecting the equipment against overvoltages. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the shorting mechanism into the varistor according to Webb, because as Webb states (col. 1, lines 46 – 63), the overheating of the varistor can jeopardize its protection ability.

Regarding Claim 10, Webb discloses the device shorting the limiting voltage device (varistor). The shorting device (fuse) has ability to short the varistor in a case of overheating. As well known in the art, the thermal time constant is substantially larger than the time constant of the electromagnetic tripping devices. Therefore, the shorting will occur only after the circuit breaker is tripped.

Regarding Claims 14 and 15, Webb discloses the shorting mechanism, which acts after some period of time, quite sufficient for tripping of the circuit breaker. As well known in the art, the heating of the matter by the electric current is a function integral of the voltage (current) over period of time. Therefore, the shorting mechanism acts by integrating the applied voltage (current) with respect to the time. The motivation for modification of the primary reference is the same as above.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore in view of Granville, Webb and Alley et al. (US 4,701,680). Claim 16 differs from Claim 15 by its limitation of including resistor in series with varistor. Alley et al. disclose the varistor (element 31 in Fig. 3) connected in series with the resistor (element 32 in Fig. 3). Both references have the same problem solving area, namely providing high voltage protection by using varistors. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the resistor in series with the varistor according to Alley et al. because according to Alley et al. (col. 4, lines 36 – 64), it serves two purposes: (a) it adjusting the threshold of activation of the varistor, and (b) the voltage drop across the

resistor is used to activate the additional protection mechanism, such as changing the dimming level.

Response to Argument


Applicant's Arguments have been given careful consideration. Most of them are now moot in view of different source of the reference. However, some of them should be addressed.

Applicant attempts to disqualify the Elmore reference on the basis that Elmore solution is more complex than the claimed one (page 5, lines 2 – 4). In response to Applicant's argument that the reference structure is more complex and includes additional elements not required by Applicant's invention, it must be noted that the Elmore reference discloses the invention as claimed. The fact that it discloses additional structure not claimed is irrelevant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Z.K.



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